REMARKS

Claims 22 and 24-42 are pending in the above-captioned application. Claims 22 and 24-42 stand rejected under 35 U.S.C. §102(b) as being anticipated by Yoo et al., U.S. Patent No. 6,309,591. Claim 22, claim 30 and claim 39 have been amended to further clarify and highlight distinctions between the present application and the cited reference. Since the reference does not disclose or suggest the inventions of the amended claims the rejections should be withdrawn and all claims 22 and 24-42 passed to allowance. Allowance of all claims 22 and 24-42 is believed appropriate and is respectfully requested.

As noted, the primary reference relied on in the Office Action for all rejections is Yoo et al. As a foundation for the distinctions between the amended claims of the present invention and the Yoo et al. reference, it will be helpful to review the fundamental teaching as well as what is not taught by the Office Action's primary reference, Yoo et al.

The cited reference to Yoo et al., teaches an apparatus for bonding a particle material to near theoretical density which includes means for applying high shear. High shear is utilized to deform an object wherein parallel planes remain parallel, but are shifted relative to one another. According to Yoo et al., in Column 4, "[h]igh shear causes deformation of the powder particles, de-agglomeration of the particles and since they are in intimate contact it reduces the consolidation temperature."

The application of high shear is an important feature of Yoo et al. as the apparatus of Yoo et al. is designed to create materials which approach a near theoretical density. As provided in the portion of the specification detailing use and operation, Yoo et al. discloses that the plunger applying shear force may rotate "at a speed of about 1-10 revolutions/min."

Conversely, the above-captioned application relates to apparatuses for forming composites which can be used for friction bearing or structural applications. Notably, the present invention can create composites over a range of densities and not just composites near a theoretical density as taught by Yoo et al. Furthermore, the above-captioned application does not include the application of high shear which would be problematic with the formation of certain composites. Specifically, the present application can be used to form composites from carbon fiber/binder mixtures, where the application of high shear could rupture the carbon fibers within the mixture resulting in a composite with less than desirable characteristics. As such, the application of high shear as is taught in Yoo et al. teaches away from the inventions of the above-captioned application as high shear would be detrimental for the formation of a carbon/carbon composites formed from a fiber reinforcement as the integrity of the fibers would be compromised.

Moreover, claims 22, 30, and 39 have been amended to further clarify distinctions between the present invention of the above-captioned application and

the cited references. Claims 22, 30 and 39 have been amended so as to include the displacement detector in the embodiments of an apparatus for forming a compressed composite material which is supported in Paragraph 24 of the above-captioned application. The displacement detector detects the displacement of the means for applying pressure, which may comprise pistons, so that an estimate of the mixture density of the mixture can be made. In practice, the control system receives signals from the displacement detector corresponding to the linear displacement so that a product with a desired density can be achieved.

Yoo et al. does not contain a displacement detector and thus does not possess the capabilities to easily estimate the density of a particle material. As indicated in Column 9 of Yoo et al. "[t]he control panel provides the following switches—power ON, power OFF, pulsing ON, pulsing OFF, meter for reading the voltage, meter for reading the current, switch for controlling the voltage, current, pulsing rate, base line, peak current, duty cycle, ram up time, ramp down time and forward/reverse switch." Notably absent from the exhaustive list in Yoo et al. is a displacement detector or similar means for estimating density. The difference between Yoo et al. and the above captioned application is significant.

Amended claim 22, 30, and 39 all have a displacement detector which is missing from Yoo et al. Furthermore as earlier discussed, Yoo et al. instead, teaches away from the inventions of the above-captioned application as Yoo et al.'s application

of high shear would compromise the integrity of carbon fibers, an element often used in carbon/carbon composites created by inventions of the above-captioned application.

As a consequence, Yoo et al. cannot render anticipated the invention of claim 22, and 24-42 of the above-captioned application, all of which should be allowed and the rejections under 35 U.S.C. §102(b) be withdrawn.

Applicant believes that all of the pending claims are in condition for allowance and respectfully requests a favorable action to that effect.

CONCLUSION

Based on the foregoing amendments and remarks, it is believed that all claims 22 and 24-42 are in condition for allowance. Such action is earnestly sought. If there remains any matter which prevents the allowance of any of the pending claims, the Examiner is requested to call the undersigned collect at 615.242.2400 to arrange for an interview which may expedite prosecution.

Applicants hereby petition the Commissioner for a one month extension of time to respond to outstanding Office Action, extending the time to respond to October 10, 2006. The Commissioner is authorized to charge any deficiency attendant to the filing of this Response to Deposit Account No. 21-0010.

Respectfully submitted,

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CERTIFICATE OF ELECTRONIC TRANSMITTAL

I hereby certify that this Response To Office Action, including Certificate of Electronic Transmittal are being electronically transmitted to the United States Patent and Trademark Office on October 10, 2006.

James R. Cartiglia

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Signature
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